

Appl. No. 09/227,593
Amendment dated October 6, 2003
Reply to Office Action of May 5, 2003

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-30. (canceled)

31. (currently amended) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxyated phosphate ester, the total concentration of phosphate ester being 7-30 wt-% of the lubricant;

1-5 wt-% linear quaternary ammonium antimicrobial agent;

chelating agent; and

water;

wherein:

the antimicrobial phosphate ester conveyor lubricant is free of fatty acid;

and

phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

32. (canceled)

33. (previously presented) The lubricant of claim 31, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

34. (canceled)

35. (previously presented) The lubricant of claim 31, wherein the pH of the lubricant is less than 8.5.

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36. (previously presented) The lubricant of claim 31, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

37. (previously presented) The lubricant of claim 31, further comprising sodium hydroxide.

38. (canceled)

39. (currently amended) The lubricant of claim ~~38~~ 31, wherein the chelating agent comprises an aminoacetic acid chelating agent.

40. (previously amended) The lubricant of claim 31, further comprising alcohol ethoxylate comprising a C₁₂-C₁₅ linear alcohol with 7 ethylene oxide units.

41. (canceled)

42. (previously presented) The lubricant of claim 31, further comprising aryl alkoxylated phosphate ester.

43. (previously presented) The lubricant of claim 42, wherein the aryl alkoxylated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

44. (currently amended) The lubricant of claim 42, comprising alkyl alkoxylated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, EDTA, and water; and further comprising ~~EDTA~~,

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~~alkylating agent, alkali metal hydroxide or ammonium salt~~ and C₁₂₋₁₅ linear alcohol ethoxylated with 7 ethylene oxide units.

45. (currently amended) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxylated phosphate ester, and aryl alkoxylated phosphate ester, the total concentration of phosphate ester being 7-30 wt-% of the lubricant:

1-5 wt-% quaternary ammonium antimicrobial agent;

chelating agent; and

water;

wherein:

the antimicrobial phosphate ester conveyor lubricant is free of fatty acid;

and

phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

46. (previously presented) The lubricant of claim 45, wherein the quaternary ammonium antimicrobial agent comprises a linear quaternary ammonium antimicrobial agent.

47. (previously presented) The lubricant of claim 45, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

48. (previously presented) The lubricant of claim 45, wherein the pH of the lubricant is less than 8.5.

49. (previously presented) The lubricant of claim 45, wherein the lubricant is formulated to provide increased antimicrobial activity of the quaternary ammonium

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antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

50. (currently amended) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxyated phosphate ester, the total concentration of phosphate ester being 7-30 wt-% of the lubricant;

1-5 wt-% linear quaternary ammonium antimicrobial agent;

chelating agent; and

water;

wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

51. (previously presented) The lubricant of claim 50, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

52. (previously presented) The lubricant of claim 51, wherein the ratio is about 2.5:1 and the mixture retains clarity when the mixture comprises 50% lubricant and 50% beverage.

53. (previously presented) The lubricant of claim 51, wherein the ratio is 1.5:1 and the mixture retains clarity when the mixture comprises more than 50% lubricant and less than 50% beverage.

54. (previously presented) The lubricant of claim 51, wherein the ratio is about 16:1 and the mixture retains clarity when the mixture comprises less than 50% lubricant and more than 50% beverage.

55. (canceled)

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56. (previously presented) The lubricant of claim 50, wherein the ratio is 1.5:1 to 10:1.
57. (previously presented) The lubricant of claim 50, wherein the ratio is 2:1 to 10:1.
58. (previously presented) The lubricant of claim 50, wherein the ratio is 2:1 to 8:1.
59. (previously presented) The lubricant of claim 50, wherein the pH of the lubricant is less than 8.5.
60. (previously presented) The lubricant of claim 50, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.
61. (previously presented) The lubricant of claim 50, further comprising alkali metal hydroxide or ammonium salt.
62. (previously presented) The lubricant of claim 61, comprising sodium hydroxide.
63. (canceled)
64. (currently amended) The lubricant of claim ~~63~~ 50, wherein the chelating agent comprises an aminoacetic acid chelating agent.

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65. (previously amended) The lubricant of claim 50, further comprising alcohol ethoxylate comprising a C₁₂-C₁₅ linear alcohol with 7 ethylene oxide units.

66. (canceled)

67. (previously presented) The lubricant of claim 50, further comprising aryl alkoxyated phosphate ester.

68. (previously presented) The lubricant of claim 67, wherein the aryl alkoxyated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

69. (previously amended) The lubricant of claim 67, comprising alkyl alkoxyated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, EDTA, and water; and further comprising EDTA, alkylating agent, alkali metal hydroxide or ammonium salt and C₁₂₋₁₅ linear alcohol ethoxylated with 7 ethylene oxide units.

70. (currently amended) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising :

alkyl alkoxyated phosphate ester, the total concentration of phosphate ester being 7-30 wt-% of the lubricant;

1-5 wt-% linear quaternary ammonium antimicrobial agent;

chelating agent; and

water;

wherein;

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the antimicrobial phosphate ester conveyor lubricant is free of fatty acid-; and
phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

71. (canceled)

72. (previously presented) The process of claim 70, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

73. (canceled)

74. (previously presented) The process of claim 70, wherein the pH of the lubricant is less than 8.5.

75. (previously presented) The process of claim 70, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

76. (previously amended) The process of claim 70, wherein the lubricant composition further comprises sodium hydroxide.

77. (canceled)

78. (previously presented) The process of claim 77, wherein the chelating agent comprises an aminoacetic acid chelating agent.

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79. (previously amended) The process of claim 70, wherein the lubricant composition further comprises alcohol ethoxylate comprising a C₁₂-C₁₅ linear alcohol with 7 ethylene oxide units.

80. (canceled)

81. (previously amended) The process of claim 70, wherein the lubricant composition further comprises aryl alkoxyated phosphate ester.

82. (previously presented) The process of claim 81, wherein the aryl alkoxyated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

83. (currently amended) The process of claim 81, wherein the lubricant composition comprises alkyl alkoxyated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxylated phosphate ester, didecyl dimethyl ammonium chloride, EDTA, and water; and further comprising EDTA, alkylating agent, alkali metal hydroxide or ammonium salt and C₁₂₋₁₅ linear alcohol ethoxylated with 7 ethylene oxide units.

84. (currently amended) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxyated phosphate ester; and aryl alkoxyated phosphate ester,
the total concentration of phosphate ester being 7-30 wt-% of the lubricant;
1-5 wt-% quaternary ammonium antimicrobial agent;
chelating agent; and
water;

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wherein:

the antimicrobial phosphate ester conveyor lubricant is free of fatty acid-; and

phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

85. (previously presented) The process of claim 84, wherein the quaternary ammonium antimicrobial agent comprises a linear quaternary ammonium antimicrobial agent.

86. (previously presented) The process of claim 84, wherein the ratio of phosphate ester to the quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

87. (previously presented) The process of claim 84, wherein the pH of the lubricant is less than 8.5.

88. (previously presented) The process of claim 84, wherein the lubricant is formulated to provide increased antimicrobial activity of the quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

89. (currently amended) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester, the total concentration of phosphate ester being 7-30 wt-% of the lubricant;

1-5 wt-% linear quaternary ammonium antimicrobial agent;

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chelating agent; and

water;

wherein phosphate ester and the quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

90. (previously presented) The process of claim 89, wherein the ratio of phosphate ester to the linear quaternary ammonium antimicrobial agent is effective to retain clarity of a mixture of the lubricant and a beverage.

91. (previously presented) The process of claim 90, wherein the ratio is about 2.5:1 and the mixture retains clarity when the mixture comprises 50% lubricant and 50% beverage.

92. (previously presented) The process of claim 90, wherein the ratio is 1.5:1 and the mixture retains clarity when the mixture comprises more than 50% lubricant and less than 50% beverage.

93. (previously presented) The process of claim 90, wherein the ratio is about 16:1 and the mixture retains clarity when the mixture comprises less than 50% lubricant and more than 50% beverage.

94. (canceled)

95. (previously presented) The process of claim 89, wherein the ratio is 1.5:1 to 10:1.

96. (previously presented) The process of claim 89, wherein the ratio is 2:1 to 10:1.

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97. (previously presented) The process of claim 89, wherein the ratio is 2:1 to 8:1.

98. (previously presented) The process of claim 89, wherein the pH of the lubricant is less than 8.5.

99. (previously presented) The process of claim 89, wherein the lubricant is formulated to provide increased antimicrobial activity of the linear quaternary ammonium antimicrobial agent when the lubricant is mixed with a beverage having a pH lower than the lubricant.

100. (previously amended) The process of claim 89, wherein the lubricant composition further comprises alkali metal hydroxide or ammonium salt.

101. (previously amended) The process of claim 100, wherein the lubricant composition comprises sodium hydroxide.

102. (canceled)

103. (currently amended) The process of claim ~~102~~ 89, wherein the chelating agent comprises an aminoacetic acid chelating agent.

104. (previously amended) The process of claim 89, wherein the lubricant composition further comprises alcohol ethoxylate comprising a C₁₂-C₁₅ linear alcohol with 7 ethylene oxide units.

105. (canceled)

106. (previously amended) The process of claim 89, wherein the lubricant composition further comprises aryl alkoxylated phosphate ester.

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107. (previously presented) The process of claim 106, wherein the aryl alkoxyated phosphate ester comprises a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups.

108. (previously amended) The process of claim 106, wherein the lubricant composition comprises alkyl alkoxyated phosphate ester comprising an alkyl group of 10 to 12 carbon atoms and an alkoxy moiety of 5 ethylene oxide units, phenol ethoxyated phosphate ester, didecyl dimethyl ammonium chloride, and water; and further comprising EDTA, alkylating agent, and C₁₂₋₁₅ linear alcohol ethoxyated with 7 ethylene oxide units.

109. (new) An antimicrobial phosphate ester conveyor lubricant comprising:
alkyl alkoxyated phosphate ester;
linear quaternary ammonium antimicrobial agent;
alkali metal hydroxide or ammonium salt; and
water;
wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

110. (new) An antimicrobial phosphate ester conveyor lubricant comprising:
alkyl alkoxyated phosphate ester;
linear quaternary ammonium antimicrobial agent;
a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups; and
water;
wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

111. (new) An antimicrobial phosphate ester conveyor lubricant comprising:
alkyl alkoxyated phosphate ester;
aryl alkoxyated phosphate ester;
quaternary ammonium antimicrobial agent;

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alkali metal hydroxide or ammonium salt; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

112. (new) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxylated phosphate ester;

a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups;

quaternary ammonium antimicrobial agent; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

113. (new) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxylated phosphate ester;

linear quaternary ammonium antimicrobial agent;

alkali metal hydroxide or ammonium salt; and

water;

wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

114. (new) An antimicrobial phosphate ester conveyor lubricant comprising:

alkyl alkoxylated phosphate ester;

linear quaternary ammonium antimicrobial agent;

quaternary ammonium antimicrobial agent;

a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups; and

water;

wherein phosphate ester and the linear quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

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115. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester;

linear quaternary ammonium antimicrobial agent;

alkali metal hydroxide or ammonium salt; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

116. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester;

linear quaternary ammonium antimicrobial agent;

a phenol phosphate ester wherein the phenol group is not substituted with alkyl groups; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

117. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester;

aryl alkoxylated phosphate ester;

quaternary ammonium antimicrobial agent;

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alkali metal hydroxide or ammonium salt; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

118. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester;

a phenol phosphate ester wherein the phenol group is not substituted with

alkyl groups;

quaternary ammonium antimicrobial agent; and

water;

wherein the antimicrobial phosphate ester conveyor lubricant is free of fatty acid.

119. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

alkyl alkoxylated phosphate ester;

linear quaternary ammonium antimicrobial agent;

alkali metal hydroxide or ammonium salt; and

water;

wherein phosphate ester and the quaternary ammonium antimicrobial agent are present in a weight ratio of 1.5:1 to about 30:1.

120. (new) A process for lubricating a conveyor used to transport containers, the process comprising applying a phosphate ester antimicrobial lubricant composition to the conveying surface of a conveyor and moving containers on the conveyor;

the lubricant comprising:

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alkyl alkoxylated phosphate ester;
linear quaternary ammonium antimicrobial agent;
a phenol phosphate ester wherein the phenol group is not substituted with
alkyl groups; and
water;
wherein phosphate ester and the quaternary ammonium antimicrobial
agent are present in a weight ratio of 1.5:1 to about 30:1.